Addresses: O. H. Garrido, Museo Nacional de Historia Natural, Capitolio Nacional, La Habana, Cuba. A. Townsend Peterson, Natural History Museum, The University of Kansas, Lawrence, Kansas 66045, U.S.A. Oliver Komar, Department of Zoology, Ohio Wesleyan University, Delaware, Ohio 43015, U.S.A.; present address Natural History Museum, The University of Kansas, Lawrence, Kansas 66045, U.S.A.

Bulwer's Petrel *Bulweria bulwerii* on St Helena

by N. P. Ashmole, M. J. Ashmole & W. R. P. Bourne

Received 22 August 1997

On 14 February 1995 MJA found a group of six fresh seabird wings at the top of the steep cliffs at Gill Point, opposite Shore Island, St Helena (15°58′S, 5°43′W). The wings had not been present 16 days earlier. The cliffs here are about 90 m high and consist mainly of loose scoria, with some more massive basalt. They are almost vertical, but a hazardous fishermen's path (which we did not go down) gives access to some rocky ledges just above sea level. The relatively level ground behind the cliff top is a barren volcanic desert locally known as the Bird Ground, where Sooty Terns *Sterna fuscata* have nested—according to a local informant—as recently as about 1984.

One pair of wings belongs to a Madeiran Storm-petrel *Oceanodroma castro,* which is already known to breed on adjacent offshore islets (Rowlands *et al.* 1998) and may also do so at Gill Point. Two other pairs are from Bulwer's Petrels *Bulweria bulwerii,* which in the North Atlantic breed commonly in the Madeira group and Salvages and more rarely in the Azores, Canaries and Cape Verde islands. These birds apparently winter to 39°S in the South Atlantic (Bourne 1995), where they have not yet been found breeding although they commonly nest alongside *O. castro* in the North Atlantic. *B. bulwerii* also breeds widely in the NW Pacific and south to 10°S in the Marquesas; these birds may winter in the Indian Ocean (Marchant & Higgins 1990), where a nest has recently been found by Mike Bell at 20°S on Round Island, off Mauritius (Megyesi & O'Daniel 1997). Bones which may have come from a single individual have also recently been found in a Polynesian archaeological site on Henderson Island at 24°S in the central South Pacific (Wragg 1995).

Three of the Bulwer's Petrel wings from Gill Point had broken humeri but were otherwise intact, while the fourth had been detached at the level of radius and ulna, with the carpus somewhat distorted. The wings are from two individuals, with wing lengths of 201 mm and 189 mm respectively. In both birds the primaries are complete, and although first examination suggested that there were some gaps in the secondary series, we have been unable to find any growing feathers and are not now convinced that any are missing; distortion may have occurred at the base of the feathers when the birds were predated. The

remiges of both birds seem rather new, though the tips of the longest primaries are slightly damaged, suggesting that the birds had been sitting in rock cavities. The greater secondary coverts are somewhat worn and are paler brown than the other feathers on the dorsal surface of the wings, forming a faint bar.

The birds could have been killed by either fishermen or a feral cat, and the available evidence is ambiguous. The six petrel wings had been broken off cleanly and were found in a group in a small disturbed area with no other remains, which supports the first hypothesis. Sooty Tern eggs have been collected for food on St Helena for centuries, and adults and young of "trophy birds" (Red-billed Tropicbirds *Phaethon aethereus*) have traditionally been eaten. This practice has declined recently but may still occasionally occur. Nobody we spoke to mentioned the taking of smaller seabirds, but we think it possible that bird carcasses might be used for bait. In Madeira large numbers of Bulwer's Petrels were minced alive to produce fishing bait as recently as July 1981 (Le Grand *et al.* 1984).

Cat predation is also plausible. A mummified kitten was found under bird bones and feathers in the floor of a small cave less than 50 m from where the wings were found, and the bleached skeleton of an adult cat was found in the open about 500 m inland from the site. On the ground above the cliff, and especially in some of the holes and crevices, are many bones, feathers and even eggshells of Sooty Terns, together with wing bones and other remains of Madeiran Storm-petrels. Cat scats can be seen in the area and Olson (1975) showed that a substantial proportion of scats collected on the island included remains of birds.

Both *Rattus norvegicus* and *Rattus rattus* are also present on the island, but we did not see evidence of them at Gill Point; we also doubt whether rats would have broken the humeri of the birds. It is unlikely that the birds were killed by a vagrant Peregrine *Falco peregrinus* or other bird of prey; sightings of raptors are exceedingly rare at St Helena and the remains were not typical of raptor kills.

The subfossil bird bones found in various parts of St Helena indicate that many species of seabird that no longer breed on the island must have done so in the past (Ashmole 1963, Olson 1975, Walker 1977). These include another species attributed to the genus *Bulweria, B. bifax* described by Olson (1975) as being intermediate between that genus and *Pterodroma* (hence the Latin specific name meaning "two-faced"). Ashmole (1963) has already noted that the few bones of this form in the collection of the Natural History Museum, Tring, are similar to those of the smaller, more lightly built gadfly petrels of the genus *Pterodroma* included by Fleming (1941) in the subgenus *Cookilaria,* which Olson (1975) apparently did not examine. In any case *B. bifax* appears to have been larger than the present birds, with ulnae measuring 69.5 and 71.8 mm compared with 66 mm in the larger of our wings and 58–65 in ten *B. bulwerii*. Ulnae from *Pterodroma defilippiana* (a member of the *Cookilaria* group from the SE Pacific) collected by WRPB are similar to those of *B. bifax* and measure 69–71 mm.

How, then, should we interpret the presence on shore on St Helena of two *Bulweria bulwerii?* The plumage of the specimens indicates that

both were adult or subadult birds which had fairly recently completed a moult of the remiges. They had come to land in a place frequented by seabirds of several other species. The critical question is whether they were migrants from the north or were members of a local breeding population, either recently established or previously overlooked. The answer must await further evidence, but worldwide data on the timing of breeding in *Bulweria bulwerii* (Mougin *et al.* 1992, Megyesi & O'Daniel 1997) show that at higher latitudes the species typically breeds during the local summer; birds with fresh remiges late in the northern winter (early February) might therefore belong to a northern hemisphere breeding population. However, laying has been recorded in both January and May in the Cape Verde archipelago and may occur year round in the Phoenix Islands near the equator in the Pacific, so it is hard to predict what seasonal pattern might be shown if there was a breeding population on St Helena.

Seabirds commonly frequent the windward side of islands, presumably to soar in the updraughts. At St Helena Masked Boobies *Sula dactylatra,* which breed on the offshore islets, habitually pass over Gill Point, gliding northwards along the coast just above the cliff top; seabirds of several other species also regularly pass by the point. Leach's Petrels *Oceanodroma leucorhoa* have been reported visiting and displaying at islets resembling their northern hemisphere breeding places off the Chatham Islands (Imber & Lovegrove 1982) and breeding on them off South Africa (Ryan & Whittington 1997). The recent discovery that Bulwer's Petrel also breeds well south of the equator in the Indian Ocean (Megyesi & O'Daniel 1997) makes it advisable to bear in mind the possibility that it might also breed on St Helena.

Acknowledgements

We wish to thank the Carnegie Trust for the Universities of Scotland, the British Ecological Society and the Percy Sladen Memorial Fund, who provided support for field work on St Helena by NPA and MJA. We are indebted to the Natural History Museum at Tring for access to their collections. Dr Christian Jouanin kindly compared our wings with specimens in the Muséum national d'Histoire naturelle in Paris and made valuable comments. We are also grateful to Brian and Mike Bell for information and to Dr Rebecca Cains-Wicks for her advice.

References:

Ashmole, N. P. 1963. The extinct avifauna of St Helena Island. *Ibis* 103b: 390–408.

Bourne, W. R. P. 1995. The movements of Bulwer's Petrel and the larger shearwaters in the Atlantic Ocean. *Sea Swallow* 44: 49–52.

Fleming, C. A. 1941. Notes on Neozelanic forms of the subgenus *Cookilaria*. *Emu* 41: 69–80.

Imber, M. J. & Lovegrove, T. G. 1982. Leach's Storm-Petrels prospecting for nest-sites in the Chatham Islands. *Notornis* 29: 101–108.

Le Grand, G., Emmerson, K. & Martin, A. 1984. The status and conservation of seabirds in the Macaronesian Islands. *ICBP Tech. Publ.* No. 2: 377–391.

Marchant, S. & Higgins, P. J. (eds) 1990. *Handbook of Australian, New Zealand and Antarctic birds,* Vol. 1: 554–557. Oxford Univ. Press, Melbourne.

Megyesi, J. L. & O'Daniel, D. L. 1997. Bulwer's Petrel. In Poole, A. & Gill, F. (eds). *The birds of North America,* No. 281, Academy of Natural Sciences, Philadelphia and American Ornithologists Union, Washington D.C., 22 pp.